

ELECTRICALLY-DRIVEN PORTABLE DIRT SCRUBBER

BACKGROUND OF THE INVENTION

EXPRESS MAIL CERTIFICATE

2/28/62 6020138438 US

I hereby certify that, on the date indicated, the fee was deposited with the U.S. Postal Service for delivery to the Addressee at the address indicated. Patents: Washington, DC 20231 by Express Mail to Addressee's service.

Name (Print)

Signature

Field of the Invention

The present invention relates to an electrically-driven portable dirt scrubber, and more particularly to an electrically-driven portable dirt scrubber for applying rotating and vibrating forces to the skin of the user to rapidly scrub off foreign matters from the skin, thereby keeping the skin clean while providing a massage effect.

Description of the Related Art

Generally, skin consists of cuticle, cutis, and subcutis, starting from the outermost layer thereof. A horny layer is formed on the cuticle to protect the skin from external stimulus. The horny layer is formed by dead cells having the form of scurf or accumulated foreign matters having the form of dirt. Such a horny layer may have an excessive thickness unless it is removed.

The horny layer having an excessive thickness may prevent breathing of skin while cutting off discharge of waste matters accumulated in the body. Accordingly, such undesirable dirt should be removed in order to keep the skin healthy, smooth and soft.

Typically, removal of dirt is carried out by manually scrubbing the skin using a wash cloth or towel. Since the scrubbing operation is manually carried out, it is difficult to optimally control the intensity and frequency of the scrubbing operation. For this reason, where an excessive scrubbing pressure is applied to the skin, it may damage the skin, or cause the skin to be dry. As a result, the skin may be aged.

In order to solve such problems, an automatic back scrubbing device has been proposed. Such an automatic back scrubbing device is mainly installed in bathhouses. However, since the automatic back scrubbing device is fixedly mounted to a floor so that it is non-movable, its carriage is impossible. For this reason, the conventional automatic back scrubbing device has an inconvenience in use. Furthermore, this automatic back scrubbing device has a limited applicability to the body. That is, this scrubbing device can be used only for particular portions of the body. In addition, there is a sanitation problem because the scrubbing device is used by many persons.

SUMMARY OF THE INVENTION

Therefore, the present invention has been made in view of the above mentioned problems, and an object of the invention is to provide an electrically-driven portable dirt scrubber which is portable, and usable for diverse portions of the body while

effectively scrubbing off foreign matters from the skin without any damage to the skin, thereby keeping the skin clean while providing a massage effect.

In accordance with one aspect, the present invention provides An electrically-driven portable dirt scrubber for frictionally removing foreign matters from the skin of a user, comprising: a main body having a handle configured to be grasped by the user, a connecting assembly connected at one end thereof to the handle and configured to be longitudinally adjustable in length, and a head pivotally coupled to the other end of the connecting assembly; a power supply mounted in the main body and charged with electric power supplied from an external power source; drive means configured to be driven by electric power supplied from the power supply in accordance with a drive signal, thereby rotating the head; and a contact member attached to the outer surface of the head, and adapted to remove foreign matters from the skin of the user in accordance with rotation of the head.

In accordance with another aspect, the present invention provides an electrically-driven portable dirt scrubber for frictionally removing foreign matters from the skin of a user while conducting a massage function, comprising: a case including a handle configured to be grasped by the user, and a head integral with the handle; a power supply mounted in the case, and charged with electric power supplied from an external

power source; drive means configured to be driven by electric power supplied from the power supply in accordance with a drive signal; and a contact member coupled to a rotating shaft included in the drive means, and adapted to come into contact with the skin of the user while rotating.

BRIEF DESCRIPTION OF THE DRAWINGS

The above objects, and other features and advantages of the present invention will become more apparent after a reading of the following detailed description when taken in conjunction with the drawings, in which:

Fig. 1 is a view schematically illustrating an electrically-driven portable dirt scrubber according to an embodiment of the present invention;

Fig. 2 is a view illustrating a contact member according to the embodiment of the present invention;

Fig. 3 is a view illustrating the operation of the electrically-driven portable dirt scrubber according to the embodiment of the present invention;

Fig. 4 is a perspective view schematically illustrating an electrically-driven portable dirt scrubber according to another embodiment of the present invention;

Fig. 5 is a sectional view illustrating the configuration of the electrically-driven portable dirt scrubber according to the embodiment of Fig. 4; and

Fig. 6 is a perspective view illustrating a contact member according to another embodiment of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Now, the present invention will be described in detail with reference to the annexed drawings.

Fig. 1 is a view schematically illustrating an electrically-driven portable dirt scrubber according to an embodiment of the present invention. Fig. 2 is a view illustrating a contact member according to the embodiment of the present invention. Fig. 3 is a view illustrating the operation of the electrically-driven portable dirt scrubber according to the embodiment of the present invention.

As shown in Figs. 1 to 3, the electrically-driven portable dirt scrubber according to the embodiment of the present invention includes a main body having a handle 50 configured to be grasped by the user, a connecting assembly connected at one end thereof to the handle 50 and configured to be longitudinally adjustable in length, and a head 10 pivotally coupled to the other end of the connecting assembly. The dirt

scrubber also includes a power supply 41 mounted in the main body and charged with electric power supplied from an external power source, drive means 21 configured to be driven by electric power supplied from the power supply 41 in accordance with a drive signal, thereby rotating the head 10, and a contact member 11 attached to the outer surface of the head 10, and adapted to remove foreign matters from the skin of the user in accordance with rotation of the head 10.

A control unit 50 is also mounted in the handle 50 of the main body. The control unit 50 includes a switch for turning on and off the drive means 21, and a controller (not shown) for controlling the drive means 21 to control the operating stage of the head 10 between first and second stages. The connecting assembly comprises a handle length adjusting member 31 connected at one end thereof to the handle 50 while having a desired length, a connecting member 30 having an L-shaped rod structure while receiving the other end of the handle length adjusting member 31 at one end thereof in such a fashion that the handle length adjusting member 31 is longitudinally movable, and a support shaft 22 connected at one end thereof to the other end of the connecting member 30 while being coupled at the other end thereof to the head 10. Thus, the connecting assembly has a substantially U-shaped structure.

A length adjusting switch 40a is provided at the connecting member 30. The length adjusting switch 40a serves to

fix an adjusted protrusion length of the handle length adjusting member 31, and to release the fixed state of the handle length adjusting member 31, so as to allow the handle length adjusting member 31 to adjust its protrusion length.

5 The drive means 21, which rotates the head 10, is coupled to the support shaft 22. The drive means 21 comprises a motor having a rotating shaft coupled to the head 10, thereby causing the head 10 to rotate. The head 10 has a dome shape while having a flat contact surface 10a at its central outer surface. The contact member 11 is detachably attached to the head 10.

10 The power supply 41 includes a chargeable battery so that it is charged with electric power from an external power source via terminals in a wireless fashion.

15 As shown in Fig. 2, the contact member 11 has a double-layer structure having an inner layer made of urethane, and an outer layer 12 made of sponge. Since the contact member 11 has such a structure, it can effectively receive a rotating force from the motor 21 while coming into soft contact with the skin at its sponge layer 12. In Fig. 2, the reference numeral 12a denotes a recess formed at the contact member 11 so as to receive the head 10. The contact member 11 may be manufactured to have diverse structures using diverse materials without being limited to the above described materials. For example, the contact member 11 may have a towel structure or a brush structure.

20

25

Preferably, the handle 50, connecting assembly, and head 10 are made of urethane exhibiting a high water resistance, a high heat resistance, and a high impact absorbance.

The motor of the drive means 21 may be a vibrating motor. In this case, the contact member 11 is vibrated by the head 10 vibrating in accordance with a vibrating force generated from the vibrating motor. Accordingly, it is possible to conduct a massage operation for the skin, using the vibrating contact member 11.

Now, the operation of the electrically-driven dirt scrubber according to the embodiment of the present invention will be described.

As shown in Fig. 3, when the electric power from the power supply 41 is applied to the motor in accordance with a switching operation of the switch included in the control unit 40, the motor is driven, thereby rotating the head 10. Accordingly, when the contact member 11 coupled to the head 10 comes into contact with a desired portion of the body, its rotating and vibrating forces are transmitted to the skin. Accordingly, functions of removing unnecessary horny layers and massaging the skin are carried out.

During this operation, it is possible to adjust the intensity of the operation conducted by the head 10 by manipulating the controller, thereby appropriately adjusting the rotating force and scrubbing pressure of the contact member

11 in accordance with a desire of the user. As described above,
the length of the dirt scrubber can be adjusted by adjusting
the protrusion length of the handle length adjusting member 31.
Accordingly, it is possible to allow the head 10 to reach a
body portion where the hand of the user cannot reach, by
appropriately adjusting the length of the dirt scrubber. Since
the connecting assembly has a U-shaped structure, the head 10
can easily reach even a body portion such as the back, where
the hand of the user cannot reach. Accordingly, the dirt
scrubber of the present invention can be easily and
conveniently used.

As described above, the charge of electric power is
achieved in a wireless fashion. In addition, the dirt scrubber
can be conveniently portable and usable because it has a small
size. Since the contact member 11 is detachable, it can be used
for diverse purposes as it is replaced with another structure.

Fig. 4 is a perspective view schematically illustrating
an electrically-driven portable dirt scrubber according to
another embodiment of the present invention. Fig. 5 is a
sectional view illustrating the configuration of the
electrically-driven portable dirt scrubber according to the
embodiment of Fig. 4. Fig. 6 is a perspective view illustrating
a contact member according to another embodiment of the present
invention.

As shown in Figs. 4 to 6, the electrically-driven portable dirt scrubber includes a case 110 including a handle 112 configured to be grasped by the user, and a head 114 integral with the handle 112. The dirt scrubber also includes a power supply 120 mounted in the case 110, and charged with electric power supplied from an external power source, drive means 130 configured to be driven by electric power supplied from the power supply 120 in accordance with a drive signal, and a contact member 140 coupled to a rotating shaft 132 included in the drive means 130, and adapted to come into contact with the skin of the user while rotating.

A control unit 150 is also mounted in the handle 112 of the case 110. The control unit 150 includes a switch for turning on and off the drive means 130, and a controller for controlling the drive means 130 to control the operating stage of the head 114 between first and second stages.

The power supply 120 includes a chargeable battery so that it is charged with electric power from an external power source via terminals in a wireless fashion. The drive means 130 comprises a motor. The motor is driven by electric power supplied from the power supply 120 in accordance with a switching operation of the switch.

As shown in Figs. 4 and 5, the contact member 140 may comprise a brush including a body 142 having a desired area, a plurality of combs 144 extending from an outer surface of the

body 142, a coupling section 148 provided at an inner surface of the body 142 and coupled to the rotating shaft 132. Alternatively, as shown in Fig. 6, the contact member 140 may comprise a soft pad including a body 142 , a sponge section 146 arranged around the body 142, and a coupling section 148 provided at an inner surface of the body 142 and coupled to the rotating shaft 132.

When the electric power from the power supply 120 is applied to the motor in accordance with a switching operation of the switch, as in the afore-mentioned embodiment, the motor is driven, thereby rotating the contact member 140 coupled to the rotating shaft 132. Accordingly, when the contact member 140 comes into contact with a desired portion of the body, its rotating and vibrating forces are transmitted to the skin. Accordingly, functions of removing unnecessary horny layers and massaging the skin are carried out.

During this operation, it is possible to appropriately adjust the contact pressure of the contact member 140 in accordance with a desire of the user by manipulating the controller of the control unit 150. Since the contact member 140 is detachable, it can be used for diverse purposes as it is replaced with another structure.

As apparent from the above description, the present invention provides an electrically-driven portable dirt scrubber which is portable, and conveniently usable for diverse

portions of the body while effectively scrubbing off foreign matters from the skin without any damage to the skin, thereby keeping the skin clean while providing a massage effect.

5 Although the preferred embodiments of the invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.